MOREWOOD – Increasing wood amount with wood based panels as sustainable sourced and recyclable structural elements for green and zero emission buildings

Summary

Operated by four partners in three countries, Turkey, South Africa, and Portugal, the MoreWood project was approved for support by the Eurogia 2030 category of the European Union's EUREKA program. The MoreWood project involves working on recycling industrial and non-industrial waste within the scope of the "Developing Sustainably Sourced and Recyclable Wood-Based Panels towards the Energy Efficiency and Zero-Emission Goal".

It is known that 40% of the world's raw material is used in the construction sector, and 50% of the CO_2 released into the atmosphere comes from concrete and steel. Therefore, green buildings, whose most important focus is on sustainability and reducing energy consumption, are seen as one of the best solutions to reduce the pressure of the construction industry on climate change and the environment. Due to its focus, green buildings require the use of renewable natural resources, which reduce carbon and energy emissions and consume less energy for the operation of buildings, instead of traditional building materials used in the construction industry. In line with this need for green buildings, the MoreWood project aims to obtain wood and agrofiber-based insulation boards, which stand out with their lightness, applicability and mechanical properties, as well as being bio-based. In this project, the main goal is trying to reduce emission levels by recycling agricultural, forest, and plastic waste and increasing the amount of carbon sink products in buildings, to provide low-emission, energy-saving buildings with more bio-based elements.

With that in mind, tannin-based glues and foam are being produced by NTE. The foam's performance is successively tested and validated by NOVA, for performance and environmental optimisation.

The tannin glues are used to produce particleboards by KEAS, with different densities, thermal conductivity and acoustic insulation, replacing urea-formaldehyde glues. The particleboards are also tested and validated by NOVA. Both products can be used together for sandwich panels.

The use of recycled polypropylene (PP), produced by Bio4Plas together with different biomasses, was tested and validated by NOVA to optimise formulation for different applications in buildings.

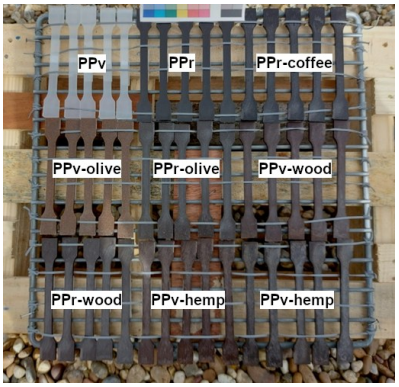

Figure 1. PP, recycled PP and recycled PP+biomass samples exposed to natural weathering.

(a)

(b)

Figure 2. Particleboard with different biomasses and tannin-based glue (a) and tannin-based insulation foams (b).

Project Reference

EU2030-19-2 / COMPETE2030-FEDER-00365700, operação n.º 12706

Leading Institution

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Funding

EUREKA, EUROGIA2030 & ANI, COMPETE 2030 Programa Inovação e Transição Digital

Period

2023-2026

Total

For Portugal: 1 413 300.00€

CERIS

CERIS NOVA Hub: 396 189.83€

Project website

https://sites.google.com/fct.unl.pt/morewood

https://eurogia.eu/running-projects/